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APHIS 91-33
August 1977

NATIONAL TICK SURVEILLANCE PROGRAM

Calendar Year 1976

Animal and Plant Health Inspection Service
UNITED STATES DEPARTMENT OF AGRICULTURE

NATIONAL TICK SURVEILLANCE PROGRAM
Calendar Year 1976

During calendar year 1976, the collection and submission of ticks from native and imported animals and plant and animal material were approximately the same as in 1975. There were 4,528 collections in 1976, compared with 4,542 collections in 1975 and 11,042 in 1974.

THE TICK ERADICATION PROGRAM IN TEXAS

The *Boophilus* tick activity in south Texas reached a level not experienced in this area in over 30 years. A total of 264 *Boophilus* collections from Texas were confirmed by the Veterinary Services Laboratory in calendar year 1976. *Boophilus annulatus* infestations were recorded from Maverick, Dimmitt, Webb, Zapata, Starr, and Wilson Counties from cattle and whitetailed deer. The tropical cattle tick, *B. microplus*, was found on cattle and deer in LaSalle, Webb, Zapata, Starr, Hidalgo, Cameron, Willacy, Kleberg, Jim Wells, and Reeves Counties. The infestation in Reeves County, an area well beyond the range where *B. microplus* is known to survive, was found on cattle recently moved from an infested premise in south Texas. Two collections of immature *Boophilus*, unidentifiable as to species, were found on horses in Kleberg County. However, since *B. microplus* was the only species reported from Kleberg County, the collections from horses were probably *B. microplus*.

The *B. annulatus* infestations were primarily confined to the quarantined buffer zone along the Rio Grande separating Texas and Mexico. The *B. microplus* ticks were found in this same general area of south Texas as well as in several counties removed from the Rio Grande and adjacent to the Gulf of Mexico.

The infested premises are under State quarantine, and active surveillance and eradication procedures are being carried out by State and Federal tick eradication personnel. Present information indicates that the infestations are limited and confined to south Texas, but other Southern States are strongly urged to institute effective surveillance programs to detect these two ticks if they are accidentally introduced. Prior to 1906, *B. annulatus* was endemic in all or parts of 12 Southern States as well as California, and reportedly caused annual losses of from $40 to $200 million. It has been estimated that in terms of today's purchasing power these losses could approach $1 billion per year. *Boophilus annulatus* has the potential of reestablishing itself in all or parts of Texas, Oklahoma, California, Arkansas, Louisiana, Mississippi, Tennessee, Alabama, Florida, Georgia, South Carolina, North Carolina, and Virginia. This area supports some 30 million cattle worth an estimated $5 billion.

The potential for the spread of *B. microplus* is not as great as that of *B. annulatus*. The tropical cattle tick, *B. microplus*, has never been established in the continental United States except in the subtropical areas of south Texas and Florida. However, in areas where it is capable of surviving, it can produce problems as serious as *B. annulatus* if not more serious. *Boophilus microplus* apparently has a slightly broader host preference than *B. annulatus*, and it usually completes the parasitic period a day or two sooner than *B. annulatus*. Also, the development of resistance to tickicides has been a much greater problem with *B. microplus* than with *B. annulatus*.

There are three important reasons for preventing the reintroduction of *Boophilus* ticks into the Southern United States. First, these ticks are serious pests and parasites of livestock, especially cattle, and in areas where they are endemic they exact tremendous economic losses on livestock by their continual annoyance and bloodsucking, even when there is no transmission of disease agents. In areas of the world where *Boophilus* ticks are a problem, livestock owners have found it necessary to institute regular control programs, often monthly, in order to prevent serious losses. These routine treatments, used as controls rather than eradication tools, often lead to the development of tickicide resistance in *Boophilus* populations. Resistance is a very real problem in Australia, South Africa, and Argentina.

Following the development of resistant tick populations, control becomes much more complicated and many times more costly.

Second, with the introduction of *Boophilus* ticks and the heavy seeding of large areas, cattle tick fever (babesiosis piroplasmosis) ultimately becomes a serious problem. There are several species of *Babesia* organisms which produce babesiosis in cattle, but essentially the conditions are similar, differing only in severity and response to treatment. The *Babesia* destroy the red blood cells causing hemoglobinuria and anemia. This is accompanied by a rise in body temperature, depression, and loss of appetite and body weight. The animal often goes into a coma and dies. In severe outbreaks, mortality may approach 90 percent. Adult cattle are especially susceptible to babesiosis. Unifortunately, several drugs which are effective against babesiosis are not currently marketed in the United States since they do not have clearance from the Food and Drug Administration. In the absence of chemotherapeutic agents for use in an outbreak of babesiosis, the best alternative is to immediately initiate a dipping program at 14-day intervals to break the life cycle of the tick vector and stop disease transmission by the ticks.

The third, but often overlooked, reason for preventing the reintroduction of *Boophilus* ticks is the fact that they are extremely efficient vectors of bovine anaplasmosis. In the Southern States, bovine anaplasmosis is an economically important disease which causes a loss of approximately $50 million a year to the livestock industry. In the South, bovine anaplasmosis is primarily transmitted by biting insects, especially horse flies; whereas, in the Northwestern States it is chiefly tick borne and transmitted by species of ticks not established in the Southern States. Insects are mechanical vectors of *Anaplasma marginale*, with a limited potential for disease transmission. Some ticks, *Boophilus* included, are biological as well as mechanical vectors of *A. marginale* and may transovarially transmit anaplasmosis. The reintroduction of *Boophilus* in the South would greatly diminish the hopes of ever eradicating bovine anaplasmosis. Control of the disease would become more difficult and costly with the presence of *Boophilus* ticks.

HUMAN *BABESIOSIS*

In recent years at least nine persons on Nantucket Island and one person of Martha's Vineyard, Massachusetts, have acquired clinical cases of babesiosis (piroplasmosis).[1] The causative agent is *Babesia microti*, which is a common protozoan blood parasite of rodents in North America. Apparently the disease is rather benign in rodents. The humans infected have complained of chills, fever, pain in the muscles and joints, and fatigue and have shown mild to moderate hemolytic anemia. In Massachusetts, no deaths were reported in the humans with this malaria-like disease.

The laboratory studies of Dr. Speilman of the Harvard School of Public Health suggest that *Ixodes scapularis* serves as a vector of babesiosis on Nantucket Island. Since *I. scapularis* is a very common tick in the Southern States and along the Atlantic coast, possibly other cases of human babesiosis have occurred but have not been correctly diagnosed.

Accorrding to Healy *et al*,[2] human babesiosis has been reported in other areas of the world, and the circumstances surrounding them differ from the cases in Massachusetts. Two documented cases were observed in Yugoslavia in 1957 and 1969, one from Ireland in 1967, and one from California in 1966. In these four cases, all the patients had previously undergone a splenectomy. Three of the four died; the survivor received an antimalarial drug, whereas the others did not. The cases in Massachusetts all involved persons with intact spleens. In Georgia, an asymptomatic babesiosis infection was diagnosed in a human with an intact spleen.

Persons frequenting areas where *I. scapularis* is a problem should be aware of the possibility of babesiosis transmission by this tick. Human babesiosis should at least be considered in the absence of a specific diagnosis in an illness characterized by chills, fever, fatigue, and painful muscles and joints. Individuals who have had their spleen removed should be especially aware of the potential danger of acquiring babesiosis.

[1] Speilman, Andrew. 1976. Human Babesiosis on Nantucket Island Transmission by Nymphal *Ixodes* Ticks. Am. Jour. Trop. Med. and Hyg.: 784-787.

[2] Healy, George R., Speilman, Andrew, Gleason, Neva. 1976. Human Babesiosis: Reservoir of Infection on Nantucket Island. Science 192: 479-480.

THE TROPICAL BONT TICK

Amblyomma variegatum, the tropical bont ticks, is still causing problems in Puerto Rico in the municipalities of Cidra and Cayey. The number of collections was down to 25 for 1976 as compared to 65 in 1975. Apparently the livestock owners in the infested area are learning to recognize the tick and attempting to coexist with it.

A real threat exists that this tick could also successfully establish itself in the continental United States, especially in subtropical Florida or extreme southern Texas. It is also quite likely that it could survive and thrive in at least the southern portion of the Gulf Coast States.

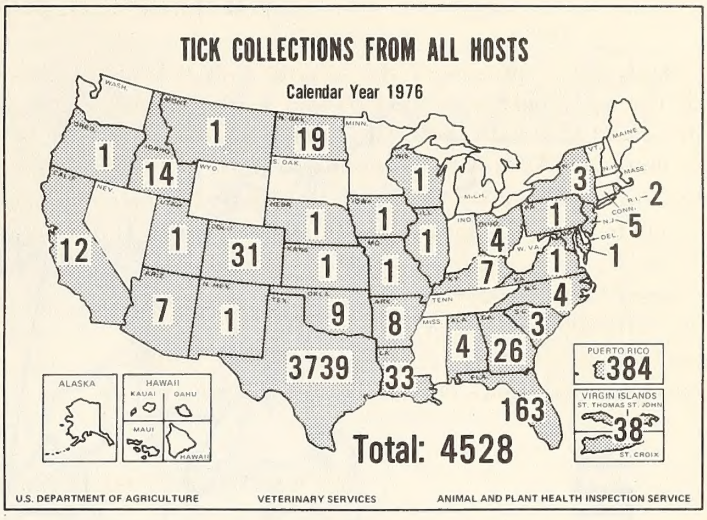
Livestock owners, veterinarians, and animal health technicians in these areas should be on the alert for the presence of an unusually large, brightly colored tick. The engorged female often measures three fourths of an inch in length. The male is highly ornamented and smaller than the female. Suspicious ticks should be collected and immediately forwarded to the Veterinary Services Laboratory for identification.

TICKS OF VETERINARY IMPORTANCE

Veterinary Services released the new tick manual entitled "Ticks of Veterinary Importance" (USDA Agriculture Handbook No. 485) in May 1976. The purpose of this manual is to serve as a training aid and provide basic information on ticks and tick-borne diseases for State and Federal animal health personnel.

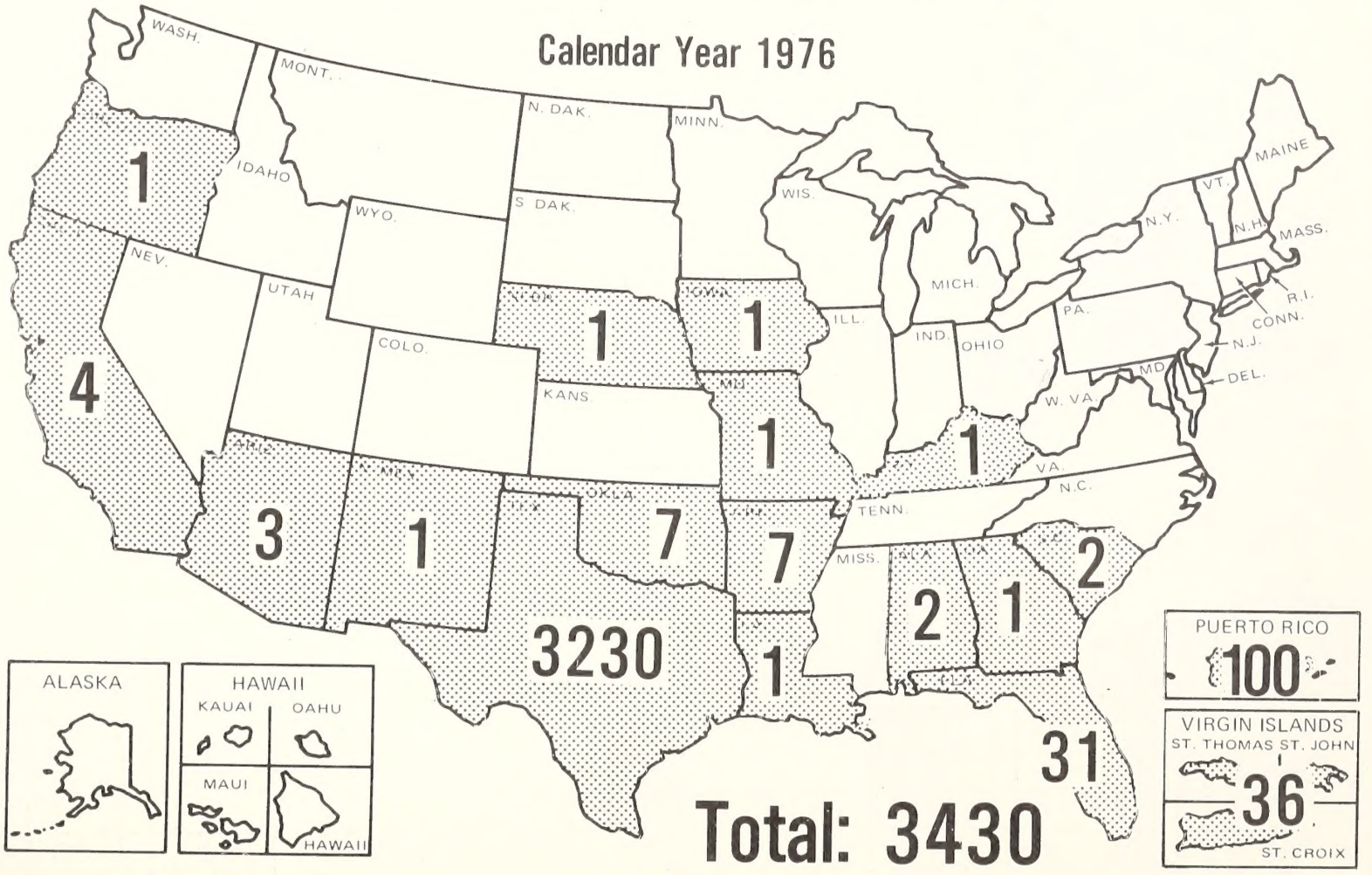
REPORT OF ALL TICKS COLLECTED
CALENDAR YEAR 1976

STATE	TOTAL	CATTLE	DOGS	HORSES & MULES	ZOO ANIMALS & MISC.	NATIVE WILDLIFE	ANIMALS OFFERED FOR ENTRY
TOTAL	4528	3430	151	575	47	277	48
Alabama	4	2				2	
Alaska							
Arizona	7	3					4
Arkansas	8	7				1	
California	12	4		3	1		4
Colorado	31		28		3		
Connecticut							
Delaware							
Florida	163	31	1	123	4	1	3
Georgia	26	1				25	
Hawaii							
Idaho	14					14	
Illinois	1				1		
Indiana							
Iowa	1	1					
Kansas	1				1		
Kentucky	7	1				6	
Louisiana	33	1		1		31	
Maine							
Maryland	1					1	
Massachusetts							
Michigan							
Minnesota							
Mississippi							
Missouri	1	1					
Montana	1				1		
Nebraska	1	1					
Nevada							
New Hampshire							
New Jersey	5				1		4
New Mexico	1	1					
New York	3		1	1			1
North Carolina	4		1		2	1	
North Dakota	19			18	1		
Ohio	4		4				
Oklahoma	9	7			2		
Oregon	1	1					
Pennsylvania	1						1
Rhode Island	2				2		
South Carolina	3	2				1	
South Dakota							
Tennessee							
Texas	3739	3230	65	196	23	194	31
Utah	1		1				
Vermont							
Virginia	1		1				
Washington							
West Virginia							
Wisconsin	1				1		
Wyoming							
Puerto Rico	384	100	49	233	2		
Virgin Islands	38	36			2		



TICK COLLECTIONS FROM CATTLE

Calendar Year 1976



U.S. DEPARTMENT OF AGRICULTURE VETERINARY SERVICES ANIMAL AND PLANT HEALTH INSPECTION SERVICE

REPORT OF TICKS COLLECTED

PERIOD: CALENDAR YEAR 1976 | HOST: CATTLE

STATE	TOTAL	AMBLYOMMA AMERICANUM	AMBLYOMMA CAJENNENSE	AMBLYOMMA IMITATOR	AMBLYOMMA MACULATUM	AMBLYOMMA SPP.	ARGAS PERSICUS	BOOPHILUS ANNULATUS	BOOPHILUS MICROPLUS	BOOPHILUS SPP.	DERMACENTOR ALBIPICTUS	DERMACENTOR NITENS (=PARUMAPERTUS) & D. VENUSTUS (=PARUMAPERTUS)	DERMACENTOR OCCIDENTALIS	DERMACENTOR VARIABILIS	DERMACENTOR SPP.	HAEMAPHYSALIS LEPORISPALUSTRIS	IXODES CONEPATI	IXODES PACIFICUS	IXODES SCAPULARIS	IXODES SPP.	ORNITHODOROS SPP.	OTOBIUS MEGNINI	RHIPICEPHALUS SANGUINEUS	RHIPICEPHALUS SPP.	MISCELLANEOUS SPP.
TOTAL	3430	1453	417	18	381	153		50	197	24	219		38	74	1	309	7	3			22			58	6		
Alabama	2	1			1																					
Alaska																										
Arizona	3										3															
Arkansas	7	7																								
California	4										1				1									2		
Colorado																										
Connecticut																										
Delaware																										
Florida	31	5			21											2					3					
Georgia	1																				1					
Hawaii																										
Idaho																										
Illinois																										
Indiana																										
Iowa	1										1															
Kansas																										
Kentucky	1															1										
Louisiana	1	1																								
Maine																										
Maryland																										
Massachusetts																										
Michigan																										
Minnesota																										
Mississippi																										
Missouri	1															1										
Montana																										
Nebraska	1															1										
Nevada																										
New Hampshire																										
New Jersey																										
New Mexico	1										1															
New York																										
North Carolina																										
North Dakota																										
Ohio																										
Oklahoma	7	3														1						3				
Oregon	1																					1				
Pennsylvania																										
Rhode Island																										
South Carolina	2	1			1																					
South Dakota																										
Tennessee																										
Texas	3230	1435	417	18	358	8[n] 119		50	162	24	213		38			303	7	3			18			52	5		
Utah																										
Vermont																										
Virginia																										
Washington																										
West Virginia																										
Wisconsin																										
Wyoming																										
Puerto Rico	100					26[v]								73										1		
Virgin Islands	36								35					1												

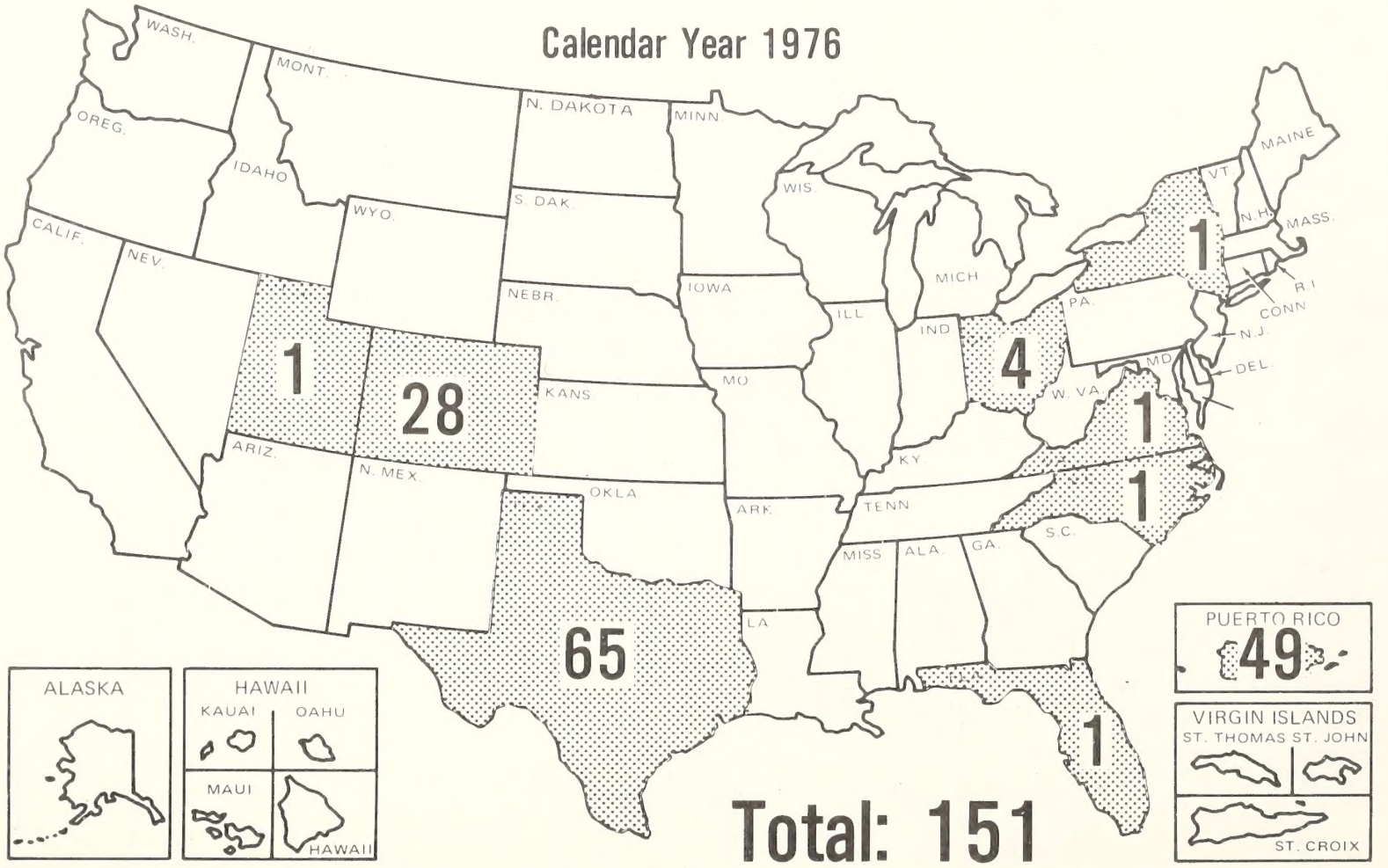
ANH FORM 5-55 MAY 1971 — REPLACES ADE FORM 5-55, DEC 1964, WHICH IS OBSOLETE — USDA-ARS

Key to Species

n Amblyomma inornatum
v Amblyomma variegatum

TICK COLLECTIONS FROM DOGS

Calendar Year 1976



U.S. DEPARTMENT OF AGRICULTURE VETERINARY SERVICES ANIMAL AND PLANT HEALTH INSPECTION SERVICE

REPORT OF TICKS COLLECTED

PERIOD: CALENDAR YEAR 1976 | HOST: DOGS

STATE	TOTAL	AMBLYOMMA AMERICANUM	AMBLYOMMA CAJENNENSE	AMBLYOMMA IMITATOR	AMBLYOMMA MACULATUM	AMBLYOMMA SPP.	ARGAS PERSICUS	BOOPHILUS ANNULATUS	BOOPHILUS MICROPLUS	BOOPHILUS SPP.	DERMACENTOR ALBIPICTUS	DERMACENTOR HALLI, D. SP. (SMALL, 8 MALES)	DERMACENTOR NITENS	DERMACENTOR OCCIDENTALIS	DERMACENTOR VARIABILIS	DERMACENTOR SPP	HAEMAPHYSALIS LEPORISPALUSTRIS	IXODES COOKEI	IXODES PACIFICUS	IXODES SCAPULARIS	IXODES SPP	ORNITHODOROS SPP.	OTOBIUS MEGNINI	RHIPICEPHALUS SANGUINEUS	RHIPICEPHALUS SPP.	MISCELLANEOUS SPP.
TOTAL	151	15			4	1						5				17			1		5	8			1	94		
Alabama																											
Alaska																											
Arizona																											
Arkansas																											
California																											
Colorado	28											5				2						3[d] 5[s]				13		
Connecticut																											
Delaware																											
Florida	1															1											
Georgia																											
Hawaii																											
Idaho																											
Illinois																											
Indiana																											
Iowa																											
Kansas																											
Kentucky																											
Louisiana																											
Maine																											
Maryland																											
Massachusetts																											
Michigan																											
Minnesota																											
Mississippi																											
Missouri																											
Montana																											
Nebraska																											
Nevada																											
New Hampshire																											
New Jersey																											
New Mexico																											
New York	1																									1		
North Carolina	1																									1		
North Dakota																											
Ohio	4															4											
Oklahoma																											
Oregon																											
Pennsylvania																											
Rhode Island																											
South Carolina																											
South Dakota																											
Tennessee																											
Texas	65	15			4	1										9			1		5			1	29		
Utah	1																								1		
Vermont																											
Virginia	1															1											
Washington																											
West Virginia																											
Wisconsin																											
Wyoming																											
Puerto Rico	49																									49		
Virgin Islands																											

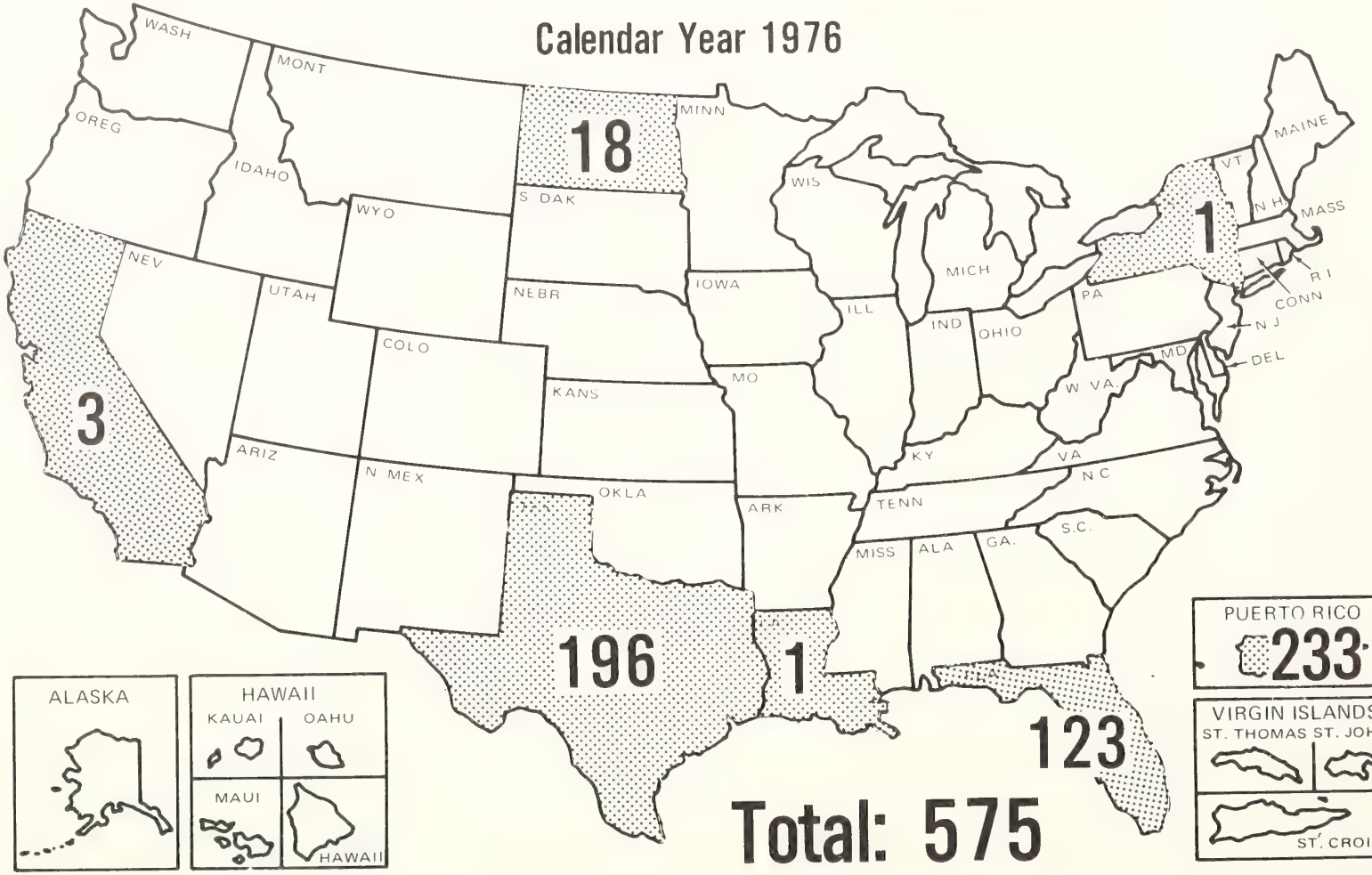
ANH FORM 5-55 MAY 1971 — REPLACES ADE FORM 5-55, DEC 1964, WHICH IS OBSOLETE — USDA-ARS

Key to Species

d Ixodes kingi
s Ixodes sculptus

TICK COLLECTIONS FROM HORSES AND MULES

Calendar Year 1976



U.S. DEPARTMENT OF AGRICULTURE VETERINARY SERVICES ANIMAL AND PLANT HEALTH INSPECTION SERVICE

REPORT OF TICKS COLLECTED

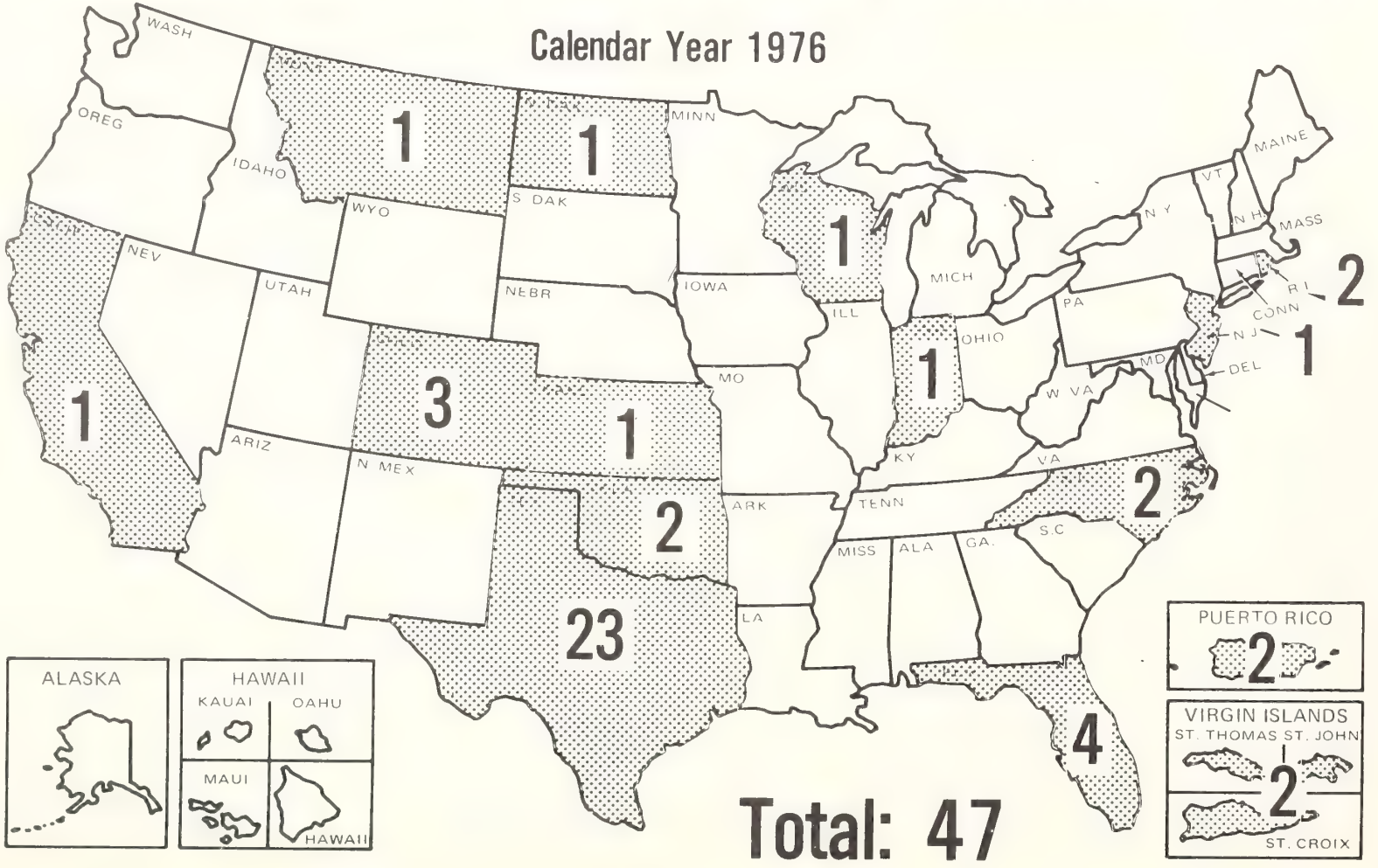
PERIOD: CALENDAR YEAR 1976 | HOST: HORSES & MULES

STATE	TOTAL	AMBLYOMMA AMERICANUM	AMBLYOMMA CAJENNENSE	AMBLYOMMA IMITATOR	AMBLYOMMA MACULATUM	AMBLYOMMA SPP.	ARGAS PERSICUS	BOOPHILUS ANNULATUS	BOOPHILUS MICROPLUS	BOOPHILUS SPP.	DERMACENTOR ALBIPICTUS	DERMACENTOR NITENS (SUPERSEDES D. VENUSTUS & D. RANCHI)	DERMACENTOR OCCIDENTALIS	DERMACENTOR VARIABILIS	DERMACENTOR SPP.	HAEMAPHYSALIS LEPORIS-PALUSTRIS	IXODES COOKEI	IXODES PACIFICUS	IXODES SCAPULARIS	IXODES SPP.	ORNITHODOROS SPP.	OTOBIUS MEGNINI	RHIPICEPHALUS SANGUINEUS	RHIPICEPHALUS SPP.	MISCELLANEOUS SPP.
TOTAL	575	25	44	2	43	7				2	14	17	5	321	3	72	1				14		?	?		
Alabama																										
Alaska																										
Arizona																										
Arkansas																										
California	3														3											
Colorado																										
Connecticut																										
Delaware																										
Florida	123				22									85		3				12		1				
Georgia																										
Hawaii																										
Idaho																										
Illinois																										
Indiana																										
Iowa																										
Kansas																										
Kentucky																										
Louisiana	1	1																								
Maine																										
Maryland																										
Massachusetts																										
Michigan																										
Minnesota																										
Mississippi																										
Missouri																										
Montana																										
Nebraska																										
Nevada																										
New Hampshire																										
New Jersey																										
New Mexico																										
New York	1															1										
North Carolina																										
North Dakota	18										1	17														
Ohio																										
Oklahoma																										
Oregon																										
Pennsylvania																										
Rhode Island																										
South Carolina																										
South Dakota																										
Tennessee																										
Texas	196	24	44	2	21	7				2	13		5	4		68	1			2			1	2		
Utah																										
Vermont																										
Virginia																										
Washington																										
West Virginia																										
Wisconsin																										
Wyoming																										
Puerto Rico	233													232										1		
Virgin Islands																										

ANH FORM 5-55 MAY 1971 — REPLACES AOE FORM 5-55, DEC 1964, WHICH IS OBSOLETE — USDA-ARS

TICK COLLECTIONS FROM ZOO ANIMALS AND MISCELLANEOUS HOSTS

Calendar Year 1976



Total: 47

U.S. DEPARTMENT OF AGRICULTURE VETERINARY SERVICES ANIMAL AND PLANT HEALTH INSPECTION SERVICE

REPORT OF TICKS COLLECTED

PERIOD: CALENDAR YEAR 1976

HOST ZOO ANIMALS and MISCELLANEOUS HOST (Sheep, Human, etc.)

STATE	TOTAL	AMBLYOMMA AMERICANUM	AMBLYOMMA CAJENNENSE	AMBLYOMMA IMITATOR	AMBLYOMMA MACULATUM	AMBLYOMMA SPP.	ARGAS PERSICUS	BOOPHILUS ANNULATUS	BOOPHILUS MICROPLUS	BOOPHILUS SPP.	DERMACENTOR ALBIPICTUS	DERMACENTOR ANDERSONI, D. OCCIDENTALIS & D. PARUMAPERTUS	DERMACENTOR NITIDUS/LINEATUS	DERMACENTOR PICTUS	DERMACENTOR SLOSSAE/HUNTERI	DERMACENTOR VARIABILIS	DERMACENTOR SPP.	HAEMAPHYSALIS LEPORISPALUSTRIS	IXODES COOKEI	IXODES PACIFICUS	IXODES SCAPULARIS	IXODES SPP.	ORNITHODOROS SPP.	OTOBIUS MEGNINI	RHIPICEPHALUS SANGUINEUS	RHIPICEPHALUS SPP.	MISCELLANEOUS SPP.
TOTAL	47	8	4		2	12			1			2		3		3		1			5		1		2		1
Alabama																											
Alaska																											
Arizona																											
Arkansas																											
California	1																				1G*						
Colorado	3					1IC[f]						1H													1HM		
Connecticut																											
Delaware																											
Florida	4				1Y																						1BA[a] 1CO[a]
Georgia																											
Hawaii																											
Idaho																											
Illinois	1					1AE[n]																					
Indiana																											
Iowa																											
Kansas	1	1SY																									
Kentucky																											
Louisiana																											
Maine																											
Maryland																											
Massachusetts																											
Michigan																											
Minnesota																											
Mississippi																											
Missouri																											
Montana	1											1H															
Nebraska																											
Nevada																											
New Hampshire																											
New Jersey	1																				1H						
New Mexico																											
New York																											
North Carolina	2	1Q																1Q									
North Dakota	1															1H											
Ohio																											
Oklahoma	2	1H														1H											
Oregon																											
Pennsylvania																											
Rhode Island	2																				1C 1H						
South Carolina																											
South Dakota																											
Tennessee																											
Texas	23	2H 1G 2Q	1GA 2H 1Q		1H	6H 4Q										1Y					1H				1HM		
Utah																											
Vermont																											
Virginia																											
Washington																											
West Virginia																											
Wisconsin	1																						1HM[k]				
Wyoming																											
Puerto Rico	2													2Y													
Virgin Islands	2								1					1S													

ANH FORM 5-55 MAY 1971 — REPLACES ADC FORM 5-55, DEC 1968, WHICH IS OBSOLETE — USDA-ARS

Key to Host

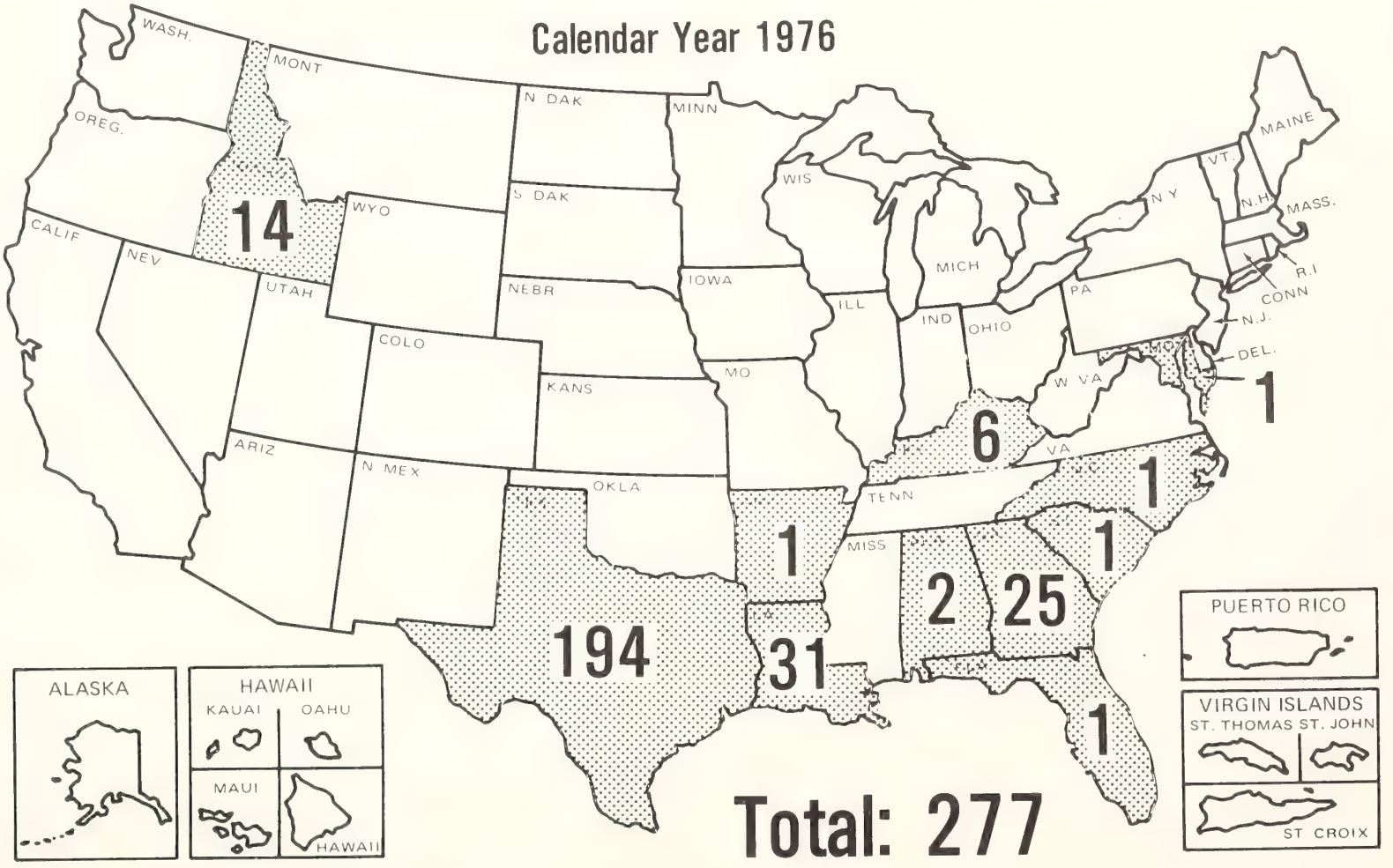
AE	Anteater	HM	Dwelling
BA	Boa Constrictor	IG	Iguana
C	Cat	Q	Host not given
CO	Cobra	S	Sheep
G	Goat	SY	Sale Yard
GK	Grass	Y	Swine
H	Human		

Key to Species

a	Aponomma latum
f	Amblyomma fissimile
n	Amblyomma nodosum
k	Ornithodoros kelleyi

TICK COLLECTIONS FROM NATIVE WILDLIFE

Calendar Year 1976



U.S. DEPARTMENT OF AGRICULTURE VETERINARY SERVICES ANIMAL AND PLANT HEALTH INSPECTION SERVICE

REPORT OF TICKS COLLECTED

PERIOD: CALENDAR YEAR 1976 | HOST: NATIVE WILDLIFE

STATE	TOTAL	AMBLYOMMA AMERICANUM	AMBLYOMMA CAJENNENSE	AMBLYOMMA IMITATOR	AMBLYOMMA MACULATUM	AMBLYOMMA SPP	ARGAS PERSICUS	BOOPHILUS ANNULATUS	BOOPHILUS MICROPLUS	BOOPHILUS SPP	DERMACENTOR ALBIPICTUS	DERMACENTOR ANDERSONI (PACIFIC COAST)	DERMACENTOR NITENS (VARIABILIS)	DERMACENTOR OCCIDENTALIS	DERMACENTOR VARIABILIS	DERMACENTOR SPP	HAEMAPHYSALIS LEPORISPALUSTRIS	HAEMAPHYSALIS PUNCTATA	IXODES CONEPATUS	IXODES PACIFICUS	IXODES SCAPULARIS	IXODES SPP	ORNITHODOROS SPP	OTOBIUS MEGNINI	RHIPICEPHALUS SANGUINEUS	RHIPICEPHALUS SPP	MISCELLANEOUS SPP
TOTAL	277	18	26		59	36		16	12	2	10	14	2	1		20	3	12	2		32	4					
Alabama	2	2D											1D														
Alaska																											
Arizona																											
Arkansas	1	1D																									
California																											
Colorado																											
Connecticut																											
Delaware																											
Florida	1					1GP[R]																					
Georgia	25	5D 2BB			1D 1BB											4R 2BB		1R	1RC		4D	1RC[t] 1L[b]					
Hawaii																											
Idaho	14											14BB															
Illinois																											
Indiana																											
Iowa																											
Kansas																											
Kentucky	6	4D														2D											
Louisiana	31	4D																			27D						
Maine																											
Maryland	1																		1TT								
Massachusetts																											
Michigan																											
Minnesota																											
Mississippi																											
Missouri																											
Montana																											
Nebraska																											
Nevada																											
New Hampshire																											
New Jersey																											
New Mexico																											
New York																											
North Carolina	1															1S											
North Dakota																											
Ohio																											
Oklahoma																											
Oregon																											
Pennsylvania																											
Rhode Island																											
South Carolina	1				1D																						
South Dakota																											
Tennessee																											
Texas	194		9J 17D		13C 55D	1J 34D		16D	12D	2D	9D 1J		1D	1D		1RC 7D 1R 8J 1QC	3D	11R			1D	1RC[t]					
Utah																											
Vermont																											
Virginia																											
Washington																											
West Virginia																											
Wisconsin																											
Wyoming																											
Puerto Rico																											
Virgin Islands																											

ANH FORM 5-55 MAY 1971 — REPLACES ADE FORM 5-55, DEC 1964, WHICH IS OBSOLETE — USDA-ARS

Key to Host

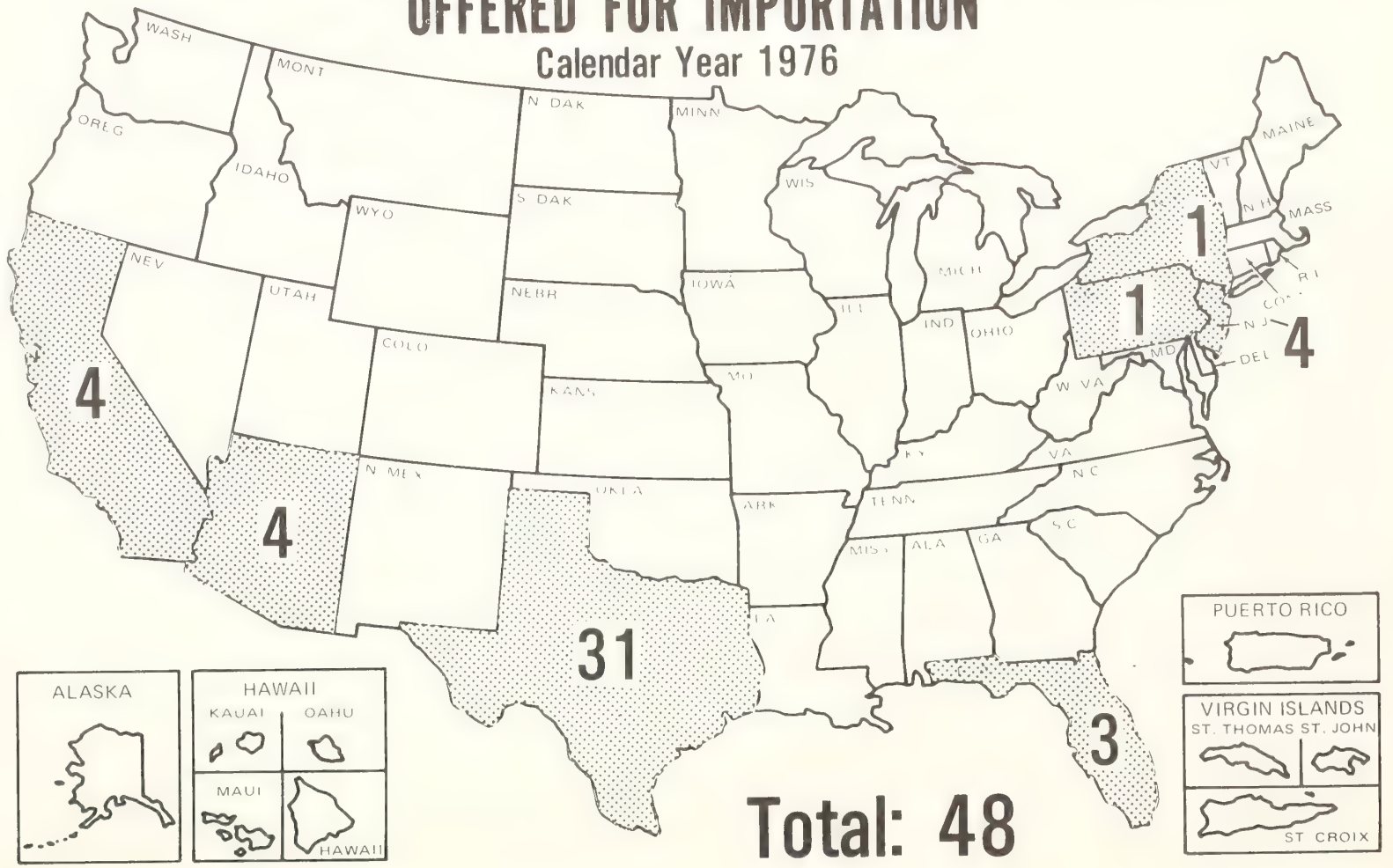
BB	Black Bear	L	Lark
BC	Bobcat	R	Rabbit
BL	Black Bird	RC	Racoon
D	Deer	S	Squirrel
GP	Gopher - tortoise	TT	Otter
J	Javalina		

Key to Species

g	Amblyomma tuberculatum
b	Ixodes brunneus
t	Ixodes texanus

TICK COLLECTIONS FROM ANIMALS AND PRODUCTS OFFERED FOR IMPORTATION

Calendar Year 1976



U.S. DEPARTMENT OF AGRICULTURE VETERINARY SERVICES ANIMAL AND PLANT HEALTH INSPECTION SERVICE

REPORT OF TICKS COLLECTED

PERIOD: CALENDAR YEAR 1976

HOST TICKS FOUND ON ANIMALS & PRODUCTS OFFERED FOR ENTRY INTO THE UNITED STATES

STATE	TOTAL	AMBLYOMMA AMERICANUM	AMBLYOMMA CAJENNENSE	AMBLYOMMA INEXTRICATUM	AMBLYOMMA MACULATUM	AMBLYOMMA SPP.	ARGAS PERSICUS	BOOPHILUS ANNULATUS	BOOPHILUS MICROPLUS	BOOPHILUS SPP.	DERMACENTOR ALBIPICTUS	DERMACENTOR SILVARUM	DERMACENTOR HUNGARICUS	DERMACENTOR NITENS	DERMACENTOR OCCIDENTALIS	DERMACENTOR VARIABILIS	DERMACENTOR SPP.	HAEMAPHYSALIS LEPORISPALUSTRIS	IXODES COOKEI	IXODES PACIFICUS	IXODES SCAPULARIS	IXODES SPP.	ORNITHODORUS SPP.	OTOBIUS MEGNINI	RHIPICEPHALUS SANGUINEUS	RHIPICEPHALUS SPP.	MISCELLANEOUS SPP.
TOTAL	48		3					3	1	29				4	1								1		1	4	1
ARIZONA																											
Nogales	4									1D 3BO																	
CALIFORNIA																											
Calexico	3													2HO 1BO													
San Ysidro	1													1HO													
FLORIDA																											
Miami	3		1OR 1OR 1F																								
NEW JERSEY																											
Clifton	4								1Z[d]																	1Z[e] 1Z[p]	1Z[y]
PENNSYLVANIA																											
Harrisburg I/A	1																									1AH	
NEW YORK																											
JFK Airport	1																									1HH[h]	
TEXAS																											
Del Rio	1									1HO																	
Eagle Pass	9							2BO		6BO 1HO																	
El Paso	17							1BO		13BO					1RC								1CP		1BG		
Presidio	4									4BO																	

ANH FORM 5-55 MAY 1971 — REPLACES ADE FORM 5-55, DEC 1964, WHICH IS OBSOLETE — USDA-ARS

Key to Host

AH	Animal Hide	F	Fern
BG	Baggage	HO	Horse
BO	Bovine	HH	Hedgehog
CP	Creosote Plant	OR	Orchid
D	Deer	RC	Raccoon
DR	Dracena (house plant)	Z	Zebra

Key to Species

d	Boophilus decoloratus
e	Rhipicephalus evertsi
h	Ixodes hexagonus
m	Rhipicephalus muehlensi
p	Rhipicephalus pulchellus
y	Hyalomma albiparmatum

Prepared by
Veterinary Services
Animal and Plant Health Inspection Service
UNITED STATES DEPARTMENT OF AGRICULTURE

UNITED STATES DEPARTMENT OF AGRICULTURE
Animal and Plant Health Inspection Service
Hyattsville, Maryland 20782

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